General

Title

Maternal and newborn care: proportion of women who delivered at term and had group B streptococcus (GBS) screening at 35 to 37 weeks' gestation.

Source(s)

Maternal newborn dashboard - key performance indicator criterion reference guide, version 1.3. Ontario (Canada): Better Outcomes Registry and Network (BORN) Ontario; 2014 Jul 2. 12 p.

Measure Domain

Primary Measure Domain

Clinical Quality Measures: Process

Secondary Measure Domain

Does not apply to this measure

Brief Abstract

Description

This measure is used to assess the proportion of women who delivered at term and had group B streptococcus (GBS) screening at 35 to 37 weeks' gestation.

Rationale

Group B streptococcus (GBS) is a bacterium which commonly infects pregnant women and poses the risk of being transmitted to infants during the perinatal period (Phares et al., 2008). GBS transmission from mother to infant carries serious health risks to the newborn including sepsis, pneumonia, or meningitis (Baker & Edwards, 1995; Davies et al., 2001; Verani et al., 2010). In both Canada and the United States, GBS disease is a leading cause of infant morbidity and mortality (Verani et al., 2010; Darling & Saurette, 2010; Money et al., 2004).

In Canada, almost one-fifth of pregnant women are colonized with GBS at 36 weeks' gestation (Darling & Saurette, 2010). If left untreated, approximately 50% of babies born to GBS positive mothers become

colonized and 1% to 2% of colonized infants develop GBS disease (Darling & Saurette, 2010). Infections occurring within the first week of an infant's life are considered early-onset GBS and are acquired through vertical transmission from a GBS colonized mother to the infant. Infections occurring after the first week of life are considered late-onset and can be acquired through both vertical transmission from the mother to the infant and horizontal transmission from the hospital or community to the infant (Canadian Task Force on Preventive Health Care [CTFPHC], 2002).

When maternal GBS infections are identified prenatally, early-onset GBS disease in the newborn can be prevented by administration of intrapartum antibiotic prophylaxis (IAP) to the mother (CTFPHC, 2002; Verani et al., 2010). The screening method that identifies the greatest number of GBS infected mothers should, therefore, result in the fewest number of infants with early-onset GBS disease. In 1996, the Centre for Disease Control and Prevention (CDC) issued recommendations for two screening strategies to prevent perinatal GBS transmission:

> Universal screening: All pregnant women are screened for GBS infection by culture testing at 35 to 37 weeks' gestation and decisions to administer IAP are based on a positive GBS culture.
> Risk-based screening: IAP is administered based on risk factors that increase likelihood of early-onset GBS infection (e.g., previous delivery of GBS-infected baby, premature delivery, maternal fever greater than 38ºC, rupture of membranes greater than 18 hours [Verani et al., 2010]).

A large population-based study conducted in the late 90s found that universal screening identified a greater proportion of women at risk of transmitting GBS to their babies than risk-based screening. Based on this study, CDC's 2002 revised guidelines recommended universal screening exclusively (Verani et al., 2010). Despite these recommendations, the issue of whether to employ a universal vs. risk-based approach to screening remains contentious. While universal screening is recommended in the United States, Canada, and Belgium, it is not currently recommended in the United Kingdom or New Zealand (Colbourn et al., 2007; CTFPHC, 2002; Melin et al., 2004; Campbell et al., 2004). Concerns remain about clinical effectiveness, cost-effectiveness, overuse of antibiotics, and medicalization of labour (Gilbert, 2004; Cromwell et al., 2007).

Evidence for Rationale

Baker CJ, Edwards MS. Group B streptococcal infections. In: Remington J, Klein JO, editor(s). Infectious disease of the fetus and newborn infant. 4th ed. Philadelphia (PA): WB Saunders; 1995. p. 980-1054.

Campbell N, Eddy A, Darlow B, Stone P, Grimwood K, New Zealand GBS Consensus Working Party. The prevention of early-onset neonatal group B streptococcus infection: technical report from the New Zealand GBS Consensus Working Party. N Z Med J. 2004 Aug 20;117(1200):U1023. PubMed

Canadian Task Force on Preventive Health Care. Prevention of group B streptococcal infection in newborns. Recommendation statement from the Canadian Task Force on Preventive Health Care. Can Fam Physician. 2002 May;48:934-5, 944-6. PubMed

Colbourn T, Asseburg C, Bojke L, Philips Z, Claxton K, Ades AE, Gilbert RE. Prenatal screening and treatment strategies to prevent group B streptococcal and other bacterial infections in early infancy: cost-effectiveness and expected value of information analyses. Health Technol Assess. 2007 Aug;11(29):1-226, iii. PubMed

Cromwell D, Joffey T, van der Meulen J, Dhillon C, Hughes R, Murphy D. The prevention of early-onset neonatal group B streptococcal disease in UK obstetric units: an audit of reported practice in England, Scotland, Wales and Northern Ireland. London (England): Royal College of Obstetricians and Gynaecologists (RCOG); 2007.

Darling E, Saurette K. Group B streptococcus: prevention and management in labour. Ontario (Canada):

Association of Ontario Midwives (AOM); 2010 Jan. 23 p. (Clinical practice guideline; no. 11).

Davies HD, Raj S, Adair C, Robinson J, McGeer A, Alberta GBS Study Group. Population-based active surveillance for neonatal group B streptococcal infections in Alberta, Canada: implications for vaccine formulation. Pediatr Infect Dis J. 2001 Sep;20(9):879-84. PubMed

Gilbert R. Prenatal screening for group B streptococcal infection: gaps in the evidence. Int J Epidemiol. 2004 Feb;33(1):2-8. PubMed

Melin P, Verschraegen G, Mahieu L, Claeys G, Mol PD. Towards a Belgian consensus for prevention of perinatal group B streptococcal disease. Indian J Med Res. 2004 May;119 Suppl:197-200. PubMed

Money DM, Dobson S, Canadian Paediatric Society, Infectious Diseases Commitee. The prevention of early-onset neonatal group B streptococcal disease. J Obstet Gynaecol Can. 2004 Sep;26(9):826-40. PubMed

Phares CR, Lynfield R, Farley MM, MohleBoetani J, Harrison LH, Petit S, Craig AS, Schaffner W, Zansky SM, Gershman K, Stefonek KR, Albanese BA, Zell ER, Schuchat A, Schrag SJ, Active Bacterial Core Surveillance/Emerging Infections Program Network. Epidemiology of invasive group B streptococcal disease in the United States, 1999-2005. JAMA. 2008 May 7;299(17):2056-65. PubMed

Thielman J, Konnyu K, Grimshaw J, Moher D. What is the evidence supporting universal versus risk-based maternal screening to prevent group B streptococcal infection in newborns?. Ottawa (Canada): Ottawa Hospital Research Institute; 2011 Oct. 11 p. (KTA Evidence Summary; no. 14).

Verani JR, McGee L, Schrag SJ, Division of Bacterial Diseases, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention (CDC). Prevention of perinatal group B streptococcal disease--revised guidelines from CDC, 2010. MMWR Recomm Rep. 2010 Nov 19;59(RR-10):1-36. [264 references] PubMed

Primary Health Components

Pregnancy; group B *Streptococcus* (GBS) screening

Denominator Description

Total number of women who delivered at term (greater than or equal to 37 weeks' gestation) and did not decline group B streptococcus (GBS) screening (see the related "Denominator Inclusions/Exclusions" field)

Numerator Description

Number of women who delivered at term and had group B streptococcus (GBS) screening at 35 to 37 weeks' gestation (see the related "Numerator Inclusions/Exclusions" field)

Evidence Supporting the Measure

Type of Evidence Supporting the Criterion of Quality for the Measure

A clinical practice guideline or other peer-reviewed synthesis of the clinical research evidence

A formal consensus procedure, involving experts in relevant clinical, methodological, public health and organizational sciences

A systematic review of the clinical research literature (e.g., Cochrane Review)

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Additional Information Supporting Need for the Measure

- Group B streptococcus (GBS) disease is a leading cause of infant mortality in Canada. Screening pregnant women for GBS colonization has been shown to greatly reduce early-onset GBS disease in infants. Screening can be done by universal culture testing or by assessing maternal risk factors.
- Universal, culture-based GBS screening of women at 35 to 37 weeks' gestation is recommended as best practice by a range of North American bodies, including the Canadian Task Force on Preventive Health Care, Society of Obstetrician and Gynaecologists of Canada, Association of Ontario Midwives, British Columbia Reproductive Care Program, Centers for Disease Control and Prevention, Institute for Clinical Systems Improvement, American College of Obstetricians and Gynecologists, American Academy of Pediatrics, American College of Nurse-Midwives, American Academy of Family Physicians, and American Society for Microbiology.
- In contrast, risk-based GBS screening is recommended by several non-North American agencies including the National Institute for Health and Care Excellence, Royal College of Obstetricians and Gynaecologists, New Zealand GBS Consensus Working Party, and New Zealand College of Midwives.
- According to a 2007 health technology assessment, until a GBS vaccine is developed, universal, culture-based GBS screening followed by intrapartum antibiotic prophylaxis for GBS positive women is considered to be the most cost effective strategy for women at low risk of GBS infection (i.e., membrane rupture greater than 18 hours or no risk factors).
- While many guidelines have made recommendations on GBS screening, there is a dearth of scientific evidence on this subject (e.g., randomized controlled trials, systematic reviews). As of 2010, there were no randomized controlled trials comparing the two strategies.

Refer to *What is Known About Universal versus Risk-based Maternal Screening to Prevent Group B Streptococcal Infection in Newborns?* for a summary of the evidence on the recommended prenatal screening strategy for group B streptococcal infection. The report's intention is to support efforts that seek to increase rates of universal GBS screening among pregnant women across Ontario.

Evidence for Additional Information Supporting Need for the Measure

Thielman J, Konnyu K, Grimshaw J, Moher D. What is the evidence supporting universal versus risk-based maternal screening to prevent group B streptococcal infection in newborns?. Ottawa (Canada): Ottawa Hospital Research Institute; 2011 Oct. 11 p. (KTA Evidence Summary; no. 14).

Extent of Measure Testing

To validate the seven potential indicators as being appropriate for use throughout the province, the authors first extracted data from the BORN Information System (BIS) for fiscal year 2009 to 2010 to assess historical and current performance on these indicators across Ontario's 14 health regions (Local Health Integration Networks). Simultaneously, evidence summaries on each of the potential indicators were developed in collaboration with the Knowledge to Action Research Centre at the Ottawa Hospital Research Institute (Thielman et al., 2011; Konnyu, Grimshaw, & Moher, "What are the drivers," 2010; Konnyu, Grimshaw, & Moher, "What are the maternal," 2011; Konnyu, Grimshaw, & Moher, "What is known," 2011; Khangura, Grimshaw, & Moher, 2010). This group, which has expertise in the review and synthesis of literature to support evidence-informed health care decision-making, assisted with determining the level of scientific evidence to support each indicator. For example, the evidence summary on early term repeat Caesarean section (i.e., before 39 weeks' gestation) in a defined population determined that as a result of this practice there were indeed objective risks to babies that could be

reduced by delaying delivery.

Following review of the data and evidence summaries, the committee removed one indicator and refined some of the others, leaving six. In five of the six, the potential for improvement in rates was obvious. The remaining indicator (rate of screening for group B streptococcus) is currently satisfactory throughout all health regions of the province; however, the committee felt it was important at the outset to have the dashboard reflect not only performance areas requiring improvement, but also areas in which performance was good.

Evidence for Extent of Measure Testing

Khangura S, Grimshaw J, Moher D. What is known about the timing of elective repeat cesarean section?. Ottawa (Canada): Ottawa Hospital Research Institute; 2010 May. 11 p.

Konnyu K, Grimshaw J, Moher D. What are the drivers of in-hospital formula supplementation in healthy term neonates and what is the effectiveness of hospital-based interventions designed to reduce formula supplementation?. Ottawa (Canada): Ottawa Hospital Research Institute; 2010 Oct. 13 p. (KTA Evidence Summary; no. 8).

Konnyu K, Grimshaw J, Moher D. What are the maternal and newborn outcomes associated with episiotomy during spontaneous vaginal delivery?. Ottawa (Canada): Ottawa Hospital Research Institute; 2011 Jul. 11 p. (KTA Evidence Summary; no. 13).

Konnyu K, Grimshaw J, Moher D. What is known about the maternal and newborn risks of elective induction of women at term?. Ottawa (Canada): Ottawa Hospital Research Institute; 2011 Mar. 13 p. (KTA Evidence Summary; no. 10).

Sprague AE, Dunn SI, Fell DB, Harrold J, Walker MC, Kelly S, Smith GN. Measuring quality in maternal-newborn care: developing a clinical dashboard. J Obstet Gynaecol Can. 2013 Jan;35(1):29-38. PubMed

Thielman J, Konnyu K, Grimshaw J, Moher D. What is the evidence supporting universal versus risk-based maternal screening to prevent group B streptococcal infection in newborns?. Ottawa (Canada): Ottawa Hospital Research Institute; 2011 Oct. 11 p. (KTA Evidence Summary; no. 14).

State of Use of the Measure

State of Use

Current routine use

Current Use

not defined yet

Application of the Measure in its Current Use

Measurement Setting

Hospital Inpatient

Professionals Involved in Delivery of Health Services

not defined yet

Least Aggregated Level of Services Delivery Addressed

Single Health Care Delivery or Public Health Organizations

Statement of Acceptable Minimum Sample Size

Unspecified

Target Population Age

Unspecified

Target Population Gender

Female (only)

National Strategy for Quality Improvement in Health Care

National Quality Strategy Aim

Better Care

National Quality Strategy Priority

Health and Well-being of Communities
Prevention and Treatment of Leading Causes of Mortality

Institute of Medicine (IOM) National Health Care Quality Report Categories

IOM Care Need

Staying Healthy

IOM Domain

Effectiveness

Data Collection for the Measure

Case Finding Period

Three-month reporting period

Denominator Sampling Frame

Patients associated with provider

Denominator (Index) Event or Characteristic

Institutionalization

Therapeutic Intervention

Denominator Time Window

not defined yet

Denominator Inclusions/Exclusions

Inclusions
Total number of women who delivered at term (greater than or equal to 37 weeks' gestation) did not decline group B streptococcus (GBS) screening

Note: The key performance indicators (KPIs) criteria are defined by the pertinent BORN Information System (BIS) data elements that are used to calculate the rates and proportion values for the respective Maternal Newborn Dashboard KPI. As well, pick-list values for each data element, when selected, will result in a patient record to be either included or excluded for a given KPI based on the KPI criterion definition.

Refer to the original measure documentation for a complete list of KPI criteria.

Exclusions
Unspecified

Exclusions/Exceptions

not defined yet

Numerator Inclusions/Exclusions

Inclusions
Number of women who delivered at term and had group B streptococcus (GBS) screening at 35 to 37 weeks' gestation (35 weeks + 0 days to 37 weeks + 0 days gestation)

Note: Refer to the original measure documentation for a complete list of key performance indicator (KPI) criteria.

Exclusions
Refer to the original measure documentation for exclusions.

Numerator Search Strategy

Institutionalization

Data Source

Registry data

Type of Health State

Does not apply to this measure

Instruments Used and/or Associated with the Measure

BORN Information System (BIS) Maternal Newborn Dashboard (MND)

Computation of the Measure

Measure Specifies Disaggregation

Does not apply to this measure

Scoring

Rate/Proportion

Interpretation of Score

Desired value is a higher score

Allowance for Patient or Population Factors

not defined yet

Standard of Comparison

not defined yet

Prescriptive Standard

Target:	Greater than 94%
Warning:	90% to 94%
Alert:	Less than 90%

Evidence for Prescriptive Standard

Sprague AE, Dunn SI, Fell DB, Harrold J, Walker MC, Kelly S, Smith GN. Measuring quality in maternal-newborn care: developing a clinical dashboard. J Obstet Gynaecol Can. 2013 Jan;35(1):29-38. PubMed

Identifying Information

Original Title

KPI 5 - Proportion of women who delivered at term and had Group B Streptococcus (GBS) screening at 35-37 weeks' gestation.

Measure Collection Name

Maternal-Newborn Care Performance Indicators

Submitter

Better Outcomes Registry and Network (BORN) Ontario - State/Local Government Agency [Non-U.S.]

Developer

Better Outcomes Registry and Network (BORN) Ontario - State/Local Government Agency [Non-U.S.]

Funding Source(s)

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Composition of the Group that Developed the Measure

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Financial Disclosures/Other Potential Conflicts of Interest

None declared.

Adaptation

This measure was not adapted from another source.

Date of Most Current Version in NQMC

2014 Jul

Measure Maintenance

Unspecified

Date of Next Anticipated Revision

Unspecified

Measure Status

This is the current release of the measure.

The measure developer reaffirmed the currency of this measure in April 2016.

Measure Availability

Source not available electronically.

For more information, contact BORN Ontario at 401 Smyth Road, Ottawa, ON, K1H 8L1; Phone: 613-737-7600 x 6022; Web site: www.bornontario.ca/en/ ; E-mail: info@bornontario.ca.

NQMC Status

This NQMC summary was completed by ECRI Institute on January 26, 2015. The information was verified by the measure developer on April 21, 2015.

The information was reaffirmed by the measure developer on April 4, 2016.

Copyright Statement

Production

Source(s)

Maternal newborn dashboard - key performance indicator criterion reference guide, version 1.3. Ontario (Canada): Better Outcomes Registry and Network (BORN) Ontario; 2014 Jul 2. 12 p.

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